

The MINING CONGRESS JOURNAL



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DECEMBER
1933



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DECEMBER

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NUMBER 12

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E. R. COOMBS
Editor

FRANK W. MORAN
Field Representative

The MINING CONGRESS JOURNAL has subscribed to the Code of Fair Practices for the Periodical Publishing Industry, which has been submitted to the President by the Periodical Publishers' Institute.

Published every month by The American Mining Congress, Washington, D. C. Edited under the supervision of James F. Callbreath, Secretary of The American Mining Congress. Copyright 1933 by The American Mining Congress, Munsey Bldg., Washington, D. C. Entered as Second Class Mail Matter January 30, 1915, at the Post Office at Washington, D. C. Published 12 times annually—the first of each month. Yearly subscription, United States and Canada, \$3.00; Foreign, \$4.00; single copies, \$0.30.

Inflation, Deflation, Reflation

THE maintenance of a sound, stable money medium is one of, if not the most important, function of government. That function should be as forcefully exercised to prevent deflation as to prevent inflation.

So-called economists whose voice is never heard in protest against deflation are always vociferous in their protest against inflation. During the years from 1920 to 1929 price levels were rapidly rising, the burdens of debtors were being rapidly decreased, high-powered salesmen were selling the earth to everybody on the installment plan, and the rosy picture of constantly increasing price levels and consequent profits lured the American people away from conservation. The abuse of credit with its certain penalties was not only accepted without protest but was actually acclaimed as a triumph of business acumen.

The bubble burst in 1929. Rapid deflation followed. The strange thing is that those economists who did not protest the wild inflationary growth preceding 1929 are so vociferous in protest against the present effort to reflate values to a proper level. It was entirely proper to inflate prices from 1926 to 1929 but a great public menace to reflate prices from the present ruinously low to the level prevailing in 1926. These wise owls blinked and saw nothing to alarm them when real inflation was in progress, but now, that relation to a proper price level is sought, are filled with consternation lest a sound money basis shall be established. Just what a proper price level should be is a difficult problem. It is plain that the level of 1929 was dangerous. It is also plain that the level of 1932 was ruinous to all debtors, and that the wild deflation of 1929 wiped out enormous fortunes and wrecked so many business enterprises as to cause widespread unemployment and general business stagnation. At this time the nation is engaged in a most revolutionary effort to raise price levels and to create a confidence that future markets will absorb the products of industry at prices which will provide the wages of reemployed labor.

Violent changes in price levels provide a fertile field for the gambling banker. Only recently have the operations of these financial sharks been exposed. Many large fortunes have been accumulated by honest business enterprises, through proper rewards to capital and management, which at the same time have been the greatest public benefactors. The enterprise which makes possible the employment of labor at proper wages is a greater benefactor than the philanthropist who contributes to charity. Such enterprises cannot prosper unless properly capitalized and in position to obtain a proper amount of credit. It is the duty of government to provide the money medium and the function of the bank to provide the credit. If either fails, modern business is practically impossible.

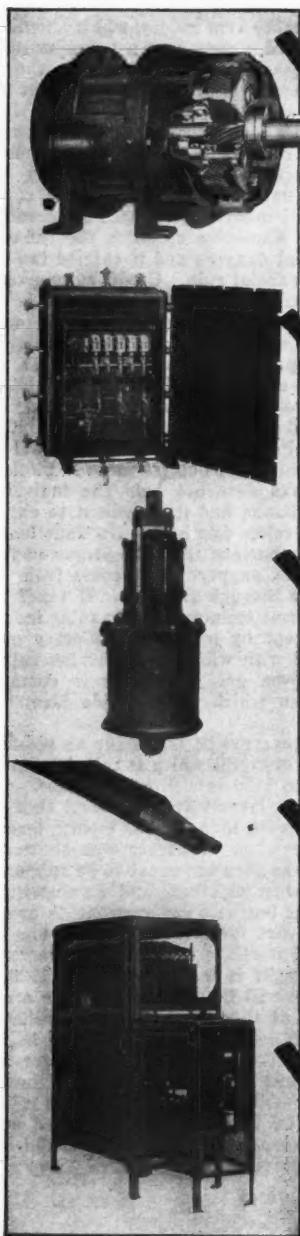
What is needed is more real money which should be supported by more hard money and a curtailment of the amount of credit, which so easily adds to the demands of speculation and which so easily drops out of sight when the speculators cease operations. Real money when idle has no earning power. It is expensive to hold real money from its legitimate earning field, but it costs nothing to withdraw credit. The real money of a solvent nation, even a large per capita amount, does not spell inflation. Reasonable credit is reasonable inflation. Excessive credit is the inflation which leads to financial dangers and if carried too far, as in 1929, leads to financial ruin. Credit as expressed in a bank note, a farm or a home mortgage, is the beginning of inflation. A distinction must be made between the solvency of a nation and the solvency of a citizen. With 40 percent of the world's gold and the power to tax the earning of three hundred billion dollars' worth of property, our nation is, and will always remain, abundantly solvent. But four billion dollars of gold in the Federal treasury does not aid the individual debtor to meet his obligations. A plethora of money in the banks does not help the individual debtor except as the banks find it expedient to extend credit in order to develop earnings. No function of government is more important than the proper control of money. Government support must come from the earnings of its people through taxation. If taxes are not paid, the government cannot live. Taxable income cannot be earned except by industry. Industry must have a measuring rod with which to determine values, as property passes from one to another in commercial transactions, from which alone stable income is developed.

A second duty of government is, so far as possible, to prevent that abuse of credit which is called inflation. All the money used in 1929 is still in existence. Our present difficulties grow largely from the fact that the enormous amount of credit, then used as money, largely went out of existence when confidence was shattered. The credit structure was then too great to be supported by the real money then existing, and its inevitable collapse forced ruinous business contraction. A proper credit structure does not need to be inflated nor deflated. It will adjust itself to business requirements. If the structure of credit is too great, as in 1929, it should, and inevitably will be, deflated. If the structure is too small, as at this time, it will be reflatd, and that reflation will not be inflation. It will be but the equitable adjustment of the rights of debtor and creditor; it will permit debtors to preserve honest equities and pay their obligations in full; it will return to creditors their entire investment with agreed upon interest; it will develop a new business confidence, provide increased employment, and restore prosperity.

J. H. Calverath

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The MINING CONGRESS JOURNAL

VOLUME 19
NUMBER 12



DECEMBER
1 9 3 3

A Journal for the entire mining industry published by The American Mining Congress

PANDEMONIUM

THE development of industry under the NRA has now reached that most unsatisfactory state of nation-wide confusion. In all the melee we seem to have lost sight of its avowed purpose. It has been and still is solely for the reemployment of the unemployed, the shortening of the work day and the increase in earnings for the masses. In any attempt to reach, quickly, such a goal, it is necessary that revolutionary methods be adopted, that time-honored precepts be defiled, and that the industrial system with which we are familiar be turned topsy-turvy.

Generally, individuals in every walk of life have gladly joined the President in his proposal for "drastic changes in the methods and forms of the functions of government." In these changes there is one fundamental principle that should not be overlooked. It is the simple one of profits. Money is never idealistic. Business cannot be sentimental. When profits are withdrawn, capital (money) goes into hiding. Without expenditure of vast sums of money in wages, plant rehabilitation, and purchase of raw materials, the NRA cannot succeed. When that same money is threatened with drastic curtailment of profits, if not actual loss, it is not forthcoming.

The President's purpose is laudable; the end desirable. Let us not nullify the excellent things sought by any unwise policy. Let us recognize that while high wages for workers are desirable, capital equally is entitled to a profitable wage.

THE GOVERNMENT BUREAUS

THE functions of government for many years past have been continually altered to meet the growing and insistent demands of minorities. At this time this tendency is unusually manifest. It is the duty of government to protect the rights of each individual against encroachment. It is the right of the citizen that his efforts shall not be interfered with. It is the duty of the citizen to support, through the taxing power, those agencies of government which are necessary to protect the rights of all citizens, but business is strictly the function of the individual.

We hear much about government aid to farming, to mining, and to other industries. The Bureau of Mines was created not to aid the mining industry but to solve problems which, because of general application, could not be successfully handled by the individual and which, therefore, offered no inducement to inventive effort. Undoubtedly, the Bureau of Mines has aided very largely in the development of various mining operations. Undoubtedly, its fundamental research work has formed a basis for inventive genius. But, on the whole, the real inventions which have served the industry and the big movements which have developed have come largely through individual effort.

At this time a review of government aid to industry merits careful study. It might be well to analyze the governmental efforts as related to farming and other enterprises. Appropriations for the Department of Agriculture, ending June 30, 1934, are \$100,209,391. The total appropriations for the Bureau of Mines and the Geological Survey are \$3,506,800.

The taxpayer has spent millions of dollars to increase production, and now it is proposed that millions be spent to

decrease production. Government agents are said to offer dollars for ploughed-in-crops, and are immediately followed by agents who suggest that by the use of those same dollars acreage used may be made to produce twice the present amount.

Is it not time for public sentiment to arise, putting its strength and influence behind the economic program, adding to the argument in favor of economy the argument in favor of a return to Jeffersonian simplicity of government, and a lopping off of all governmental activities which are not proper governmental functions, leaving the business of the nation to be done by its citizens and confining government to its necessary and proper domain? Surely it is still true that the peoples who are governed least are governed best.

WOOD PRESERVATION

MOST of us are familiar with the old saying that one rotten apple will eventually spoil the whole barrel, but most of us probably do not know that this same principle applies to mine timbering. This point is brought out in the Maryland Bureau of Mines Monthly Notes in an article by Mr. Reamy Joyce, from which we quote the following:

"The practice of leaving in place rotten timber sets and placing new untreated timber in close proximity to the decayed sets is the quickest method that could be used to insure speedy infection and decay of the new timber. The further practice of using old, infected or decayed timber as lagging or of disposing of it by piling it back in the gob, means that this old timber continues to produce fungi and millions of spores or seeds are sent out into the mine headings to be carried by the air currents to all parts of the mines."

Another proverb which is particularly applicable to the subject of wood preservation in mining is that an ounce of prevention is worth a pound of cure. Haulage wrecks are frequently caused by track failures that are directly attributable to decayed ties. The ties may crush under the rail, making a low joint, or the spikes may become loosened, allowing the rails to spread. Slate falls, after they occur, are often shown to have been caused by decay of the timber supports. The indirect cost of the delays caused by timber failure, as well as the direct cost for labor and material of replacement, may be greater than the cost of treating the timber, and wood preservation is a subject which every mining company should investigate.

RESPONSIBILITY

THE recent radio address of General Hugh S. Johnson protested that, in spite of favorable conditions created for organized labor by the NRA, uncontrollable strikes will make impossible the carrying out of the provisions of the act. He is entitled to an unqualified support in his declaration that: "These vast organizations of industry and labor must each be responsible to government and each must admit governmental participation and control. No industrial combination must be permitted to practice monopolistic oppression and exploitation. No labor combination must be permitted to paralyze a whole industry by the unchecked use of power."



LEGISLATION

THE "Alphabet Parade" goes merrily on, the latest addition to the group being CWA, which plans expenditures in public works that will employ millions. Control features of the NRA program have begun to take more definite and tangible form through a series of codes establishing a close governmental supervision over all important industries. There are many who believe that bureaucracy will defeat many of the good points of the recovery program. So far, it has been a three-cornered battle—management, labor, and bureaucracy—and each has been charged with "selfish ambitions."

Possibly the most disturbing and interesting battle is that being waged in relation to money. It is apparent that politics will have a very great influence in the situation, particularly after January 1 and the convening of the new Congress. Republicans are already whetting their political axes and have adopted their war cry of "Sound Money." Unquestionably, there will be considerable noise. It is said that votes are already being counted in the House and Senate. The House seems to be definitely for inflation and the Senate solidly back of President Roosevelt. The President's tremendous personal popularity may be counted upon as a very strong factor in favor of any plan he advocates. However, the battle promises to be ferocious and probably will go down as the greatest money fight in American history.

Mr. Morgenthau's appointment to the important post of the Treasury has been regarded by many as distinctly favorable

to the silver producers and has again raised hope that something will be done for this industry. His publication, "The American Agriculturist," has gone on record as in favor of limited use of bi-metalism, saying, "It is possible to put both gold and silver back of our currency, limiting the amount of silver to be used for such purpose. * * * Under proper control, two metals back of the dollar are better than one. * * * Something more than gold is needed to stabilize our currency." It is not anticipated that any immediate announcement in regard to silver will be made.

Washington is full of rumors as to impending changes in the official personnel. The retirement of Secretary Woodin, Undersecretary Acheson, and Professor Sprague did not come as a surprise. It is stated with some authority that the next change will come in the office of the Director of the Budget, Lewis W. Douglas, who has been placed in an interesting position of having the Government with two budgets over which he has control of but one . . . and the minor one at that. There has been a divorcement between the "Emergency Appropriations and Budget" and the "Regular" fiscal operating budget of permanent Government projects. In one the object is to reduce expenditures to the limit; in the other to spend with all possible dispatch.

The Tennessee Valley Authority Act (TVA) marks the beginning of a new national policy in relation to power and inaugurates a "National Power Program." It has two major objectives:

(1) the effective protection of the public interest, and (2) the increased use of electricity in the homes, farms, and factories. Its ultimate aim is an electrified America. The development of this project will be watched with deep concern by all of those who have so strongly opposed the Government in entering business in competition with its own enterprises, and will be watched with equal fervor by those who have so long advocated Government's control of all natural resources.

General Hugh S. Johnson recently declared that we are 25 percent out of the depression. He has announced a new set-up of compliance boards to enforce codes, including NRA supervision of code administration. He has appointed labor policy boards for the bituminous industry and is working steadily toward "master codes," as in the construction and machinery industries.

"Washington Merry-Go-Round" never seemed so appropriate as now. Everything is moving . . . swiftly and in all directions. There seems to be extra steam and pressure to get as many things over the hill as possible before a Congress, from whom many rumblings have been heard, convenes. In the meantime, the country awaits the outcome of the President's monetary policy; the long discussed aid to the silver producer; a clarification of the code situation, with the final appointment of code authorities; the report of the special committee investigating the possibility of new methods of taxation; some indication as to which way the wind will blow in regard to the agitation for the 30-hour week and the spread of employment; and what will be done for the Bureau of Mines in the present effort to consolidate various Government agencies. All roads still lead to Washington, all eyes are turned in its direction, and all ears are attuned to statements emanating therefrom. Major history is being written daily, and industry, whether apprehensive, jubilant, or complacent, is keenly aware of a political and industrial upheaval.



MINING EVENTS

Silver and Gold

GOVERNMENT aid to silver now appears more likely than ever. Senator Pittman, of Nevada, predicts that Congress will ratify an international agreement restoring silver money. Senator Thomas, of Oklahoma, has recommended purchases by the Government on an increasing price scale with the view to enactment of legislation providing for wider use of silver. The appointment of Mr. Morgenthau to the Treasury Department is another favorable factor, since he is reported to be in sympathy with bimetalism.

Senator Pittman cabled Sir George Schuster at New Delhi, India, in regard to India's approval of the silver anti-dumping agreement worked out at the London Economic Conference, that President Roosevelt "has under consideration action before Congress meets" and that "Congress will undoubtedly carry out agreement." Mr. Pittman stated that India's ratification "removes all doubts as to what other governments might do with regard to the agreement, and it removes the possible threat of any dumping from India." He said that our government is obligated to carry out the agreement because it was proposed by the United States delegation on behalf of the President and that the President has been considering the necessary steps to comply. Mr. Pittman further stated that since Congress has granted authority to recognize silver, he had no doubt that the President would act before Congress convenes.

The London agreement provides that the United States, Australia, Canada, Mexico, and Peru refrain from selling silver during the four-year period beginning January 1, 1934, but must purchase in the aggregate 35,000,000 ounces from their mines each year or withdraw that amount from the market. India is restricted to sales of 35,000,000 ounces yearly, and China is not permitted to sell silver procured by debasing coin. The agreement must be ratified by the governments involved by April 1, 1934.

Action by the President permitting America's participation in the agreement would result in the removal of 24,000,000 ounces of newly mined silver each year from the domestic market. This silver, it is explained, could be coined or purchased for use as reserve. Canada, under the agreement, takes 3,000,000 ounces annually off the market; Mexico, 6,000,000 ounces; Australia, 1,000,000 ounces; and India, 1,000,000 ounces.

Senator Thomas, speaking before the American Academy of Political and Social Science in Philadelphia, pointed out that under the powers given by Congress the President is now taking steps to force down the value of the paper dollar so that he can later stabilize the value of the dollar in terms of gold and through issuance of silver certificates

against silver received from foreign governments. He stated that along with the policy of purchasing gold at a constantly increased price until the value of the paper dollar reaches the desired level, there should be a like policy with respect to silver.

We understand that there is a strong group in both houses of Congress preparing to support the remonetization of silver, and that it is planned to push for a program at the coming session which goes much farther than the silver agreement. In the meantime, there can be no very substantial purchases since the Thomas amendment authorizing acquisition of silver to a fixed ratio to gold cannot be executed on account of the new gold policy.

PRODUCTION of silver from mines in the United States declined during October to 1,781,000 fine ounces from 1,918,000 in September, and 1,918,000 fine ounces in October, 1932, reports the American Bureau of Metal Statistics. Canadian production amounted to 1,638,000 fine ounces compared with 1,618,000 in September and 1,853,000 in October, a year ago.

Mexican output is estimated at 5,000,000 ounces for October. This compares with 4,324,000 in September and 6,067,000 in the like month last year. The Mexican increase brought October world output to 13,376,000 ounces from 12,692,000 in September. Thus far this year, however, world output is running behind 1932. The monthly average for January-October this year is about 13,200,800 fine ounces compared with the average monthly rate of about 14,000,000 in 1932.

Practically no change was shown in the imports of silver bullion into this country during October, although larger receipts of silver coin were reported. The following table compares the monthly receipts of the various classes of silver thus far this year from abroad:

1933	Ore and Base Bullion Troy Ounces	Refined Bullion Troy Ounces	Coin U. S.	Coin Foreign
October	2,316,128	7,437,515	\$355,082	\$100,266
September	2,324,816	7,016,215	61,229	9,409
August	1,460,707	*23,777,202	39,802	2,933
July	2,447,640	†13,899,377	33,573	3,503
June	1,098,891	41,235,793	244,830	2,369,719
May	1,299,302	15,500,175	33,023	5,050
April	1,741,445	3,596,811	40,057	10,864
March	1,836,010	4,117,429	42,739	32,895
February	1,045,455	2,129,911	44,865	896
January	3,027,487	3,717,804	48,694	1,855
January-October	18,597,881	122,428,232	\$943,894	\$2,537,390
January-October, 1932 ..	20,439,099	29,246,840	1,657,541	1,078,534

* Includes 2,000,000 ounces on government account. † Includes 20,000,000 ounces on government account.

Supplies of new silver from the mines are being augmented by the "release from previous accumulations, which in recent years have been largely from British India and Russia to Great Britain and Germany." These supplies from Russia have increased sharply this year. In the first 10 months of this year Great Britain received 4,520,096 ounces of refined silver from Russia, compared with 1,891,358 during 1932.

In addition 18,036,587 ounces of unrefined silver were received during the first 10 months compared with 6,592,200 during 1932. In the first nine months of this year, Germany has received 18,612,278 ounces of silver from Russia compared with 16,614,400 during 1932, but no distinction is made between refined and unrefined metal. With regard to this point, the bureau states, "The importations into Germany from Russia, which started in 1932, were of material only about 50 percent in that year. We have no means of calculating the grade of the imports in 1933."

British receipts of silver from British India continue heavy. In the first 10 months, receipts of 5,308,296 of refined and 27,093,711 unrefined silver were reported. This compares with 6,674,466 and 22,945,500 in 1932 and 831,097 and 26,816,300 in 1931.

Lack of exports continues to be a feature of the United States silver situation. Total exports from New York during October amounted to 2,000,000 ounces, all of which went to China, compared with 5,482,000 in September, of which 5,027,000 ounces were consigned to China. Total exports from New York thus far this year amount to 20,787,000 ounces compared with 20,814,000 during the corresponding period last year. Of this amount, China took 11,156,000 fine ounces compared with 15,865,000 last year. India has taken no silver this year and only 652,000 ounces in all of 1932.

Copper

TRADING STATISTICS record a reduction of 16,000,000 pounds in copper stocks held in North and South America, which is due to reduced mining activities rather than to increased consumption. October production was placed at approximately 67,000,000 pounds, about half of which was mine output and the remainder scrap. Consumption during the month was estimated at 73,000,000 pounds. As compared to September, this would indicate a slight increase in total production and a slight decrease in consumption.

World stocks are said to have been reduced 14,000,000 pounds during October and 310,000,000 pounds since the first of the year, reducing the total existing surplus to 1,266,000,000 pounds. Stocks in North and South America on November 1 were placed at slightly above 1,000,000,000 pounds.

Some progress has been reported in the formulation of the copper code, following the discussions between Deputy Administrator King of NRA and a producers' committee. The prospects for an agreement were said to be more promising than at any previous stage of the negotiations. The failure of the industry to adjust differences has been interpreted in some quarters as the reason for the curtailment of copper mining and the increased working of scrap.

AFTER SEVERAL DAYS of discussion on the copper code with Washington officials, producers appointed J. R. Hobbins, Anaconda Copper Mining Company; B. N. Zimmer, American Metals Company; and A. E. Petermann, of Calumet and Hecla Consolidated Copper Company, as a special committee to draft a code that will be acceptable to the whole copper industry. Administrator King urged producers in custom smelters to reconcile their difficulty. He pointed out that there was considerable amount of labor unrest in the industry and while only approximately 16,000 men are employed in the industry he had received more inquiries concerning the copper code than on any other code, although some of the industries employ more than half a million men.

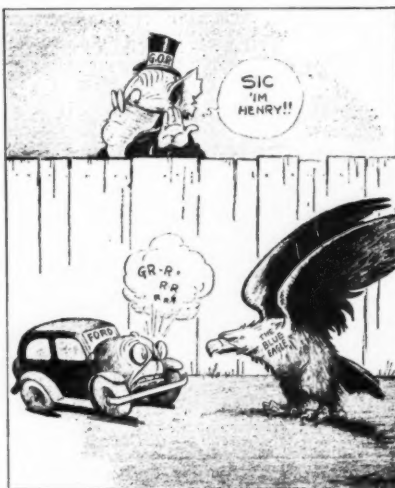
F. H. Brownell, American Smelting and Refining Co., in a recent statement said there were large accumulations of scrap copper in the hands of the large automobile companies, like General Motors and Chrysler, and the public utility company, as well as the large electrical manufacturing companies. He estimates this scrap copper and brass in the hands of large companies at 100,000 short tons.

Mr. Brownell said that these large companies have canvassed the situation and studied the cost of producing copper abroad. Taking into consideration the tariff of 4 cents a pound on copper, they figure that copper from abroad may invade this country at prices above 10 cents. These large companies therefore are planning to sell this scrap back to the industry at prices between 9 and 10 cents a pound. He added that no matter how much the industry wishes to get

higher prices for copper it would seem, in face of this large scrap accumulation, and the stocks of refined copper unwise for the copper industry to expect a price higher than 10 cents a pound for many months to come.

FAIR progress is reported by the committee in drafting the new code. It is understood that the text will probably differ in many important details from the original draft presented to NRA. Producers are said to be very much encouraged although the suggested draft apparently gives no suggestion for bridging the differences between producers and custom smelters. It is understood that the code now under consideration

THE INNOCENT BYSTANDER!



—Washington Daily News

contains provisions for a minimum price, to be revised when it is judged to have become unreasonable. It continues the preference to custom smelters sales at a total of 15,000 tons a month. Any sales above 37,000 short tons a month are to be made from stocks. Mine output is to be limited to a total of 22,000 tons a month. There is no limitation on output of secondary copper but there is a limitation as to sales. The code authority selection is modified, the number of members remain eleven but there will be two members instead of one who shall not have any direct connection or interest in the copper industry. There will be three representatives for producers with annual production exceeding 150,000 tons; two representatives of other primary producers; two representatives of custom smelters and producers of secondary copper; one representative of NEMA and one representative of the fabricators.

L. S. Cates, in speaking before the Mining and Metallurgical Society, advocated the maintenance of a sufficient tariff on copper "to guarantee the United States producer at least his domestic market."

CHAS. F. WILLIS, publisher of the *Mining Journal of Arizona*, believes that the recognition of Soviet Russia will mean considerable for the domestic copper industry. He points out that this country is practically a virgin territory insofar as modern comforts, luxuries and efficiency are concerned. He believes that to modernize Russia as they are planning will require a tremendous quantity of copper. It has already been pointed out that Russia has been negotiating now for 100,000 tons of copper in the United States. Mr. Willis believes that the next five years Russia will provide for even greater expenditures than in the past five years when she provided for an expenditure of some \$33,000,000,000, a large part of which was expended for electrical equipment. He states that the Russian government plans to increase the production of electrical power by the erection of 64 large scale power plants and that production will be stepped up from 5,000,000,000 kilowatt hours to 22,000,000,000.

Mica

A PUBLIC hearing on the proposed basic code of fair competition for the mica industry was held November 17. The code was submitted by the Mica Institute, claiming to represent 88 percent of the industry. Deputy Administrator Malcolm Pirnie presided.

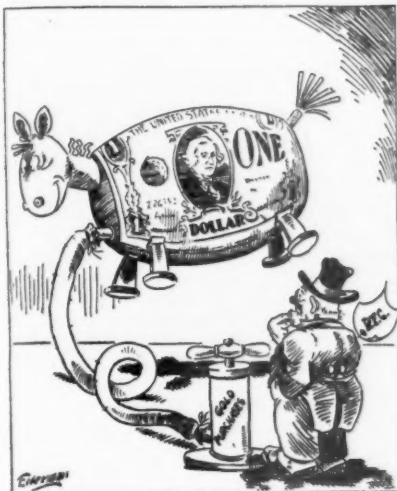
The mica industry, as defined in the code, means the mining, importing, grinding, manufacturing, and fabricating of mica, including muscovite, biotite, phlogopite, and all other forms of mica and products made exclusively or largely therefrom.

A maximum week of 40 hours, averaged over periods of six months beginning February 1 and August 1 of each year is proposed, no employee being permitted to work in excess of 54 hours in any one week. The maximum hours would not apply to employees on emergency maintenance or repair work, engineers, firemen, outside sales force, supervisory staff, shipping crews, watchmen and cleaners, provided that no such employee be permitted to work more than 54 hours in any one week.

A minimum wage of 32 cents per hour is proposed for the northern section (north of the Mason and Dixon line), unless the hourly rate for the same class of work on July 15, 1929, was less, and in no event less than 30 cents per hour. For the southern section a minimum wage of 30 cents per hour is proposed, unless the hourly rate on July 15, 1929, was less, but in no event less than 25 cents per hour. Learners, superannuated and disabled employees would receive not less than 80 percent of these minimum rates.

PURDUE UNIVERSITY announces its Ninth Annual Conference on Welding to be held at Lafayette, Ind., on December 7-8, 1933. This conference will be held under the direction of the Engineering Extension Department and the Department of Practical Mechanics, with the manufacturers of welding equipment cooperating.

GOING FOR A RIDE?



—The Washington Post

Anthracite

PUBLIC hearings on the code for anthracite were held November 17. W. H. Davis, Deputy Administrator, presided. The code was presented by a preponderance of the tonnage of the district, although two of the large producers—the Philadelphia and Reading and the Lehigh Valley Coal Co.—failed to sign.

C. F. Huber, chairman of the Anthracite Code Committee, in presenting the code said:

"Twenty years ago, anthracite was the dominant domestic fuel in New England, in the Middle Atlantic States, in Canada and to a lesser degree in the Middle West. Ten years ago it was still able to maintain its normal yearly output through increased population, notwithstanding shrinkage in demand in the more remote territory. From 1923 to 1929, by gradual decline, there was a market shrinkage of 20 percent. The depression simply accelerated the decline so that, in 1932, production was 40 percent less than in 1923, or at the level of 40 years ago. In the period 1924 to 1931, while anthracite was suffering this loss of tonnage, the consumption of domestic coke in the United States increased 188 percent and the consumption of oil for domestic heating increased 391 percent.

"Wages, hours, and other conditions of employment (so far as those engaged in the actual mining and preparation of coal is concerned) have been established through collective bargaining with organized labor for the past thirty years. In that period hours have been shortened and wages have been increased many times, but never decreased. Adjusted by the Arbitration Board appointed by President Wilson in 1920, when the cost of living index stood at 216.5, they were further increased 10 percent through unwise political intervention in 1923, when the index had dropped to 169.7. It was only a short time thereafter that the ball of anthracite started its uninterrupted rolling down hill.

"Operators have not been unmindful of this uneconomic position of their industry and, in the settlement of the strike for higher wages in the winter of 1925-1926, insisted on a provision in the contract that wages might be reopened and referred to outside parties within the contract period. The same provision is embodied in the existing contract of August 8, 1930, expiring April 1, 1936. Acting under this provision, operators endeavored to adjust their wage scales by direct negotiation in 1932, but finding labor solidly against any wage reduction, resorted to the second step of submitting the issue to a Board of Reference. Because the two men constituting the Board could not agree, and because the miners' representative on said Board refused to join in selecting a third man to render a decision, the spirit and intent of the contract was frustrated and the effort to secure an adjudication failed. This inability to secure a wage adjustment down to the present time has left wages 'frozen,' regardless of changing economic conditions and economic levels.

"Hourly rates and contract rates in the anthracite field are far greater than those provided in the bituminous field under the code recently approved for that industry. This artificial level of labor costs (constituting 60 percent of total production costs) has been one of the major factors in reducing markets and in increasing unemployment. The costs of transportation, distribution and taxation have undoubtedly added to the difficulties of the situation, but in the absence of a willingness to adjust labor costs within the industry itself, it has been found doubly difficult to secure co-operation in the adjustment of other costs entering into the price the consumer pays for the product.

"The trend of anthracite sales for the last decade confirms the conclusion that shrinkage in markets is not merely the result of a depression. The decline in production began several years before 1929 and the depression, bringing to every householder the necessity for economy, merely accelerated the transfer of patronage to less expensive fuels. Nor can it be said that loss of markets has been due primarily to decreased demand for some kind of heat, for figures in the printed briefs and report, submitted herewith, show that the major part of this lost tonnage is reflected in increased orders for competing fuels. This diagnosis is corroborated by a comparison of the retail prices of anthracite with prices of competing fuels which have encroached on its markets.

"There is a limit to which a situation of this kind can be met by ordinary economies in operation and business administration. This is particularly true in an industry where 60 percent of the production cost is controlled by a wage contract. Notwithstanding these limitations, operating costs have been reduced 75 cents a ton since 1924; but during the same period the average mine price of the product has been reduced more than \$1.00 per ton in an effort to meet competition. A portion of these economies have

THE EARLY BIRDS



—The Washington Post

been effected through the closing down of high cost collieries as part of a necessary program of adjusting production to demand and cost to price.

"It is quite clear that the industry cannot, under existing conditions, solve the problem of shrinking markets and increasing unemployment by reducing further the mine price of its product. It has already followed that trail to a perilous extent. A consolidated balance sheet covering over 85 percent of the tonnage of anthracite for the period 1926 to 1931, which includes four years of general prosperity in other industries, shows that the return on the investment, after allowing for normal deductions, averaged only 3.9 percent and since that time this slender margin of profit has yielded to an operating loss of nearly \$20,000,000 for the eighteen months ending June 30, 1933. The ratio of current assets to current liabilities, which in 1926 was 2.9 to 1, by the end of 1932 had fallen to 1.4 to 1. If figures were available for 1933 they would show still further deflation in the same direction.

"It is because of these inexorable conditions that the proponents of this code, in their letter of transmittal, state:

"The problem of unemployment in this industry is the problem of regaining markets lost to competitive fuels. Considering the nature of that competition, any plan which in its effort to remedy the unemployment situation, created increased operating costs, would defeat its very purpose. The ultimate solution depends on the extent to which everyone involved is willing to co-operate in making it possible to increase employment by expanding the present restricted markets."

"The situation may be summarized in a few short paragraphs as follows:

Employment has shrunk as markets have shrunk and employment cannot be increased unless markets can be expanded.

Prices now in effect provide an inadequate return and the industry's financial condition is precarious.

High-cost collieries have been closed of necessity, and spreading work to include such closed collieries is economically impossible under existing conditions.

Any policy which increased anthracite costs is certain to accelerate the present trend of declining markets and decreasing employment.

"In substantiation of these conclusions attention is invited to the two briefs of the operators before the Board of Reference under the wage contract and the report of Mr. George Rublee, one of the referees, under date March 1, 1933—all of which are filed with this statement.

"We submit that the peculiar position of this industry, which for over thirty years has been operating under labor contracts embodying in principle the ideals of the Recovery Act and paying the same wage rates as were paid during the period of the nation's greatest prosperity, calls for special consideration. The industry, throughout the depression, has made the largest contribution to recovery that could possibly be made when considered in relation to its market possibilities. When the effects of this policy on the balance sheet of the industry are thoroughly understood, we believe that the National Recovery Administration will recognize that the industry is already bearing a maximum of financial burdens and is fully meeting its responsibilities under the National Industrial Recovery Act."

THOMAS KENNEDY, secretary-treasurer, U. M. W. of A., spoke in opposition to the code, stressing the need for increased employment in the field. W. A. Clark, president, New England Coal Dealers Association, spoke for National Retailers, and R. Cappellini, spoke for the united anthracite miners.

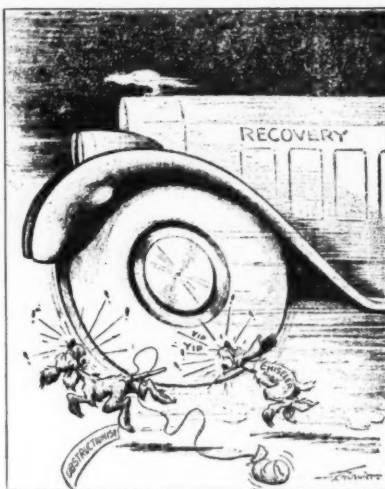
Aside from emergency measures to be applied to give immediate relief, a permanent program was outlined by Mr. Kennedy as follows: (1) equalization of work among the various collieries; (2) a shorter work week and work day to absorb the unemployed; (3) restriction of stripping operations unless used in connection with underground mining, no stripping operation to be worked in excess of the time worked by the colliery or mine to which it is attached; (4) drastic curtailment or elimination of loading of culm banks during the emergency; (5) no hiring of new men while former employees are available; (6) old age pensions and compensation to men disabled through mining operations; (7) establishment of a board under the code to study and report upon plans for the permanent equalization of the work and the stabilization of the industry.

A difficult situation confronts the NRA with regard to the anthracite code. It would like to spread work, to insure a larger number of working days per year to the miner, to even reduce the working schedule to 30 hours per week. But how can it do any of these things without raising wages and thus increas-

ing the cost of coal? And with the competitive situation which anthracite faces any material increase in price is bound to result in loss of market and consequently reduced employment. It is a vicious circle no matter how one looks at it. As one official remarks, the only sure thing is continued unrest in the region, in view of the disturbances which have already taken place.

Nevertheless, the Labor Advisory Board of NRA intends to insist on some improvement in the labor situation. It is asking for a 30-hour week, despite the agreement between the operators and the U. M. W., without any deviation from the existing daily wage rate. It feels that the code as offered by the operators does not carry out the pur-

IN THE PATH OF PROGRESS!



—The Washington Daily News

poses of the Recovery Act and that employment must be increased. It recognizes, however, the danger of higher coal costs and the possible boomerang which might result to the detriment of the very workers they would benefit and therefore it is not apt to go the limit for a 30-hour week. Yet, it realizes that there are some 60,000 miners idle in the anthracite sections and it will insist on getting at least 20 percent of this group back to work. It looks to government forestry work and the Civil Works Administration to provide substantial employment and with the prospect of 10,000,000 tons to be purchased for relief distribution it feels the situation can be vastly improved during the winter. It is planned to get the code out of the way in two or three weeks. Meetings were held during the week and others are scheduled for next week in New York or Washington.

ALARGE part of the retail coal code hearings was devoted to unfair trade practices, designed to eliminate "snowbirds" (wagon dealers), coal bootleggers and "shoe-string" peddlers. There was also considerable discussion regarding

the operations of coal truckers, with various attendants defending this business.

The retailers cautioned against any marked increase in distribution costs which might be imposed in the code. Roderick Stephens, chairman of the Code Committee of the National Retail Coal Merchants Association, pointed out that stability in coal production would be futile without stability in marketing. "Economical and effective distribution backed by effective service is essential to the maintenance of existing markets," he said. Ira Cochran of the Association stated that any marked increase in costs due to unfair wage increases would permit the competitive forms of fuel to make still further inroads into the business.

Joseph E. Gehringer, representing the Lehigh Valley Independent Coal Merchants Association, urged that the code authority include two members chosen by independent merchants using trucks and one by independent merchants not using trucks. He declared that the National Retail Coal Merchants Association was not representative of the industry.

The question of price-fixing also came up, with some members protesting against the wording of article 6 in the proposed code which provides for fair market prices. It was held that the wording would permit a small majority of large yard operators to dictate to a large majority of small operators. R. R. Bowie, representing 110 small operators and retailers in Pennsylvania, said that his clients operate small mines and truck most of their product directly or indirectly to the consumer. "We can sell coal at less than the big coal yard operators," he said, "and still make our fair margin of profit. In any discussion of price-fixing we ought to be allowed to sell at a price which permits us our profit and still gives the consumer the advantage of our reduced costs." He suggested that any fixed price be based upon cost at the mine plus the cost of delivery to the consumer.

THE QUESTION of what constitutes a "wholesaler" in coal was a much debated subject in the wholesale coal trade hearings. Deputy W. H. Davis, presiding, said that an attempt is being made to clarify this point to determine what particular class of distributor is to be permitted to come under the various distributors' codes. Clarence V. Beck of the National Retail Coal Merchants Association suggested that a wholesaler be defined as one "who buys and sells coal in railroad cars and cargo vessels." The retailer, he suggested, belongs to that part of the industry "where distribution is required by trucks or wagons." Howard W. Vesey of the Chicago Coal Merchants Association defined a wholesaler as "a selling agent for a producer" and said that "the moment a wholesaler begins to deliver by truck or wagon he becomes a retailer." W. E. Keller of the Northwestern Retail Coal Dealers Association said that in the northwest a wholesaler is "one who buys for resale."

TWO GROUPS joined in the presentation of the proposed code for the coal dock industry—the Lake Michigan and Lake Superior Coal Dock Operators and the New England Coal Dock Operators. Allan M. Mcleod, chairman of the Code Committee of the New England operators, told of the importance of the dock trade in New England coal movements. Quoting figures of the Massachusetts Commission on the Necessaries of Life, he showed that 57 percent of New England's solid fuel receipts continue to be shipped by tidewater to seaport. Approximately 190 wharves and docks along the New England coast are engaged in discharging coal from vessels intended for resale to others, he stated. Mr. Mcleod said that it is obvious that some of the definitions set forth in the code for the retailers and that for the dock operators conflict with each other by reason of the fact that since the advent of the motor truck much of the tonnage formerly shipped to quantity consumers and retail dealers in railroad cars by dock operators is now shipped in motor trucks. He said that the situation is more complicated by the further fact that the definition of a member of the industry as given in the dock operators code leaves it open to any retailer engaged in receiving coal by water to become an adherent to this code although it was not the intention of the dock operators to win jurisdiction over the retail dealers in this category. John A. Mahr, representing the Great Lakes group, explained that the operations of the dockers in his district consists in removing by their own equipment coal from vessels in port without the use of a ships crew, cleaning and processing such coal, classifying it and stockpiling it for redistribution. He said that some dock operators also maintain equipment and engage in the business of fueling vessels. All dock operators, he explained, are distinguished from those engaged in the business of wholesaling by reason of their possession of handling facilities which require large investment and the necessary use of such facilities in their business.

TEN BILLION TONS of recoverable hard coal constitute America's domestic fuel reserves in the anthracite region of Pennsylvania, according to Allen J. Johnson, Laboratory Director of the Anthracite Institute, of New York, in an address here before the fall meeting of the American Institute of Mining and Metallurgical Engineers today.

Recent laboratory development of high efficiency methods of burning anthracite, Mr. Johnson explained, represented the industry's purpose to conserve the supply in the consumer's cellar, not the hard coal resources underground, which, at the present rate of consumption, will continue to heat American and Canadian homes for another two hundred years.

With graphic charts the speaker illustrated to the engineers results of comparative tests of all leading fuels,

and demonstrated the geological and mechanical preparation factors which explained the cleanliness, safety, and steady burning qualities of anthracite.

Through the Anthracite Institute, he said, 95 percent of the anthracite tonnage operated a self-policed code of preparation at the mines, which had raised the fuel standard to the highest point in history.

Accurate sizing of hard coal was one of the objectives of the mechanical improvements of recent years at the collieries, Mr. Johnson said. The Anthracite Institute research laboratory, he explained, had recently promulgated a method by which the owner of a furnace may determine for himself the proper size of anthracite to use. In average practice, Mr. Johnson said, egg coal, the largest size, is for fire pots of not less than 24-inch diameter and 16-inch depth; stove size for fire pots of not less than 16-inch diameter and 12-inch depth. Chestnut size depends upon exceptional draft conditions in furnaces, and is ideal for kitchen ranges and water heaters. Pea coal also can be satisfactorily used where there is adequate natural draft. Buckwheat sizes generally require forced draft, as in automatic stoker application.

A completely automatic anthracite home heating unit which will operate with no more attention than filling the bin once a year was described as a development of the laboratory.

THE TOTAL production of anthracite (which includes colliery fuel) for the week ending November 18, as estimated by the United States Bureau of Mines, Department of Commerce, Washington, D. C., amounted to 1,317,000 net tons. This is an increase, as compared with production of the preceding week, of 468,000 tons, or 55.1 percent. Production during the corresponding week of 1932 amounted to 1,080,000 tons.

THE STATE DEPARTMENT of Internal Affairs which recently announced the 1932 production of anthracite, has just compiled figures showing that last year's production of bituminous coal was 71,755,806 tons. Bituminous coal was mined in 28 of the State's 67 counties.

The 1932 soft coal tonnage does not include the coal used at the mines. In 1931, the bituminous production was placed at 94,346,345 tons. The 1932 production was valued at \$96,701,400 as compared with \$149,400,200 in 1931. Last year the mines gave employment to 101,003 persons and the industry's payroll was \$63,871,500, while in 1931 there were 114,756 persons engaged by the mining companies and their pay aggregated \$100,122,200. Capital invested in 1932 totaled \$433,005,000 and in 1931 it was estimated at \$469,560,200.

Production by counties was: Allegheny, 10,394,428 tons; Armstrong, 2,328,884; Beaver, 38,391; Bedford, 297,497; Blair, 153,042; Bradford, 6,939; Butler, 440,369; Cambria, 10,871,851; Cameron, 3,112; Centre, 438,081;

Clarion, 1,030,162; Clearfield, 2,545,169; Clinton, 81,212; Elk, 691,553; Fayette, 8,138,019; Fulton, 175,307; Greene, 3,139,978; Huntington, 529,185; Indiana, 5,401,492; Jefferson, 1,713,768; Lawrence, 125,544; Lycoming, 25,526; Mercer, 109,241; Somerset, 5,388,867; Tioga, 159,245; Venango, 4,064; Washington, 10,035,065; and Westmoreland, 7,489,615.

—(Anthracite Institute).

Bituminous

BITUMINOUS OPERATORS have been busy with problems involved in completing code authorities, and setting up the machinery to operate under their national code.

Organization of the bituminous coal industry, as required under the code, has been completed, with the appointment by President Roosevelt of the presidential members of the National Bituminous Coal Industrial Board, the presidential members of the division and subdivision code authorities and the impartial, employer and employee members of the National Bituminous Coal Labor Board. Presidential appointees on the Industrial Board are Hugh S. Johnson, Fred G. Tryon and George W. Anderson.

The presidential members of Code Authorities, the divisions or subdivisions which they will represent and their headquarters are as follows:

Division I.—Wayne P. Ellis, Washington, D. C. (Pennsylvania, Ohio, lower peninsula of Michigan, Maryland, West Virginia, Kentucky, Northern Tennessee, Virginia and North Carolina.)

Subdivisions of Division I.—George Anderson, New York, N. Y.; Walter A. Jones, Pittsburgh, Pa.; Benedict Crowell, Cleveland, O.; George B. Hadesty, Fairmont, W. Va.; Frank L. Poindexter, Cincinnati, O.; Fred K. Prosser, Bluefield, W. Va.

Division II.—Joseph Harrington, Chicago, Ill. (Illinois, Indiana and Iowa).

Subdivision of Division II.—Frank C. Woodward, Terre Haute, Ind.

Division III.—Monte Lehman, Birmingham, Ala. (Alabama, Southern Tennessee and Georgia).

Division IV.—Robert S. Lemon, Kansas City, Mo. (Missouri, Kansas, Arkansas and Oklahoma).

Division V.—Arthur Vail, Denver, Colo. (New Mexico, Colorado, Utah, Wyoming, North Dakota, South Dakota, Montana, Idaho, Washington, Oregon, California, Nevada and Arizona).

The members of the several divisional labor boards are as follows:

Division I (North).—John M. Carmody, Pittsburgh, Pa., impartial; F. P. Hanaway, Pittsburgh, Pa., employee; R. L. Ireland, Cleveland, Ohio, employer.

Division I (South).—Charles B. Barnes, Cincinnati, Ohio, impartial; Van A. Bittner, Charleston, W. Va., employee; E. C. Mahan, Knoxville, Tenn., employer.

Division II.—John A. Lapp, Chicago, Ill., impartial; Ora E. Gassaway, Brazil, Ind., employee; J. H. Cartwright, Terre Haute, Ind., employer.

Division III.—J. D. Acuff, Birmingham, Ala., impartial; William Mitch, Birmingham, Ala., employee; A. B. Aldridge, Birmingham, Ala., employer.

Division IV.—M. S. Johnston, Kansas City, Mo., impartial; David Fowler, Muskogee, Okla., employee; P. R. Stewart, Fort Smith, Ark., employer.

Division V.—T. S. Hogan, Denver, Colo., impartial; James Morgan, Cheyenne, Wyo., employee; D. D. Muir, Jr., Salt Lake City, Utah, employer.

The industry had already appointed its representatives on the National Bituminous Coal Industrial Board as follows:

Division I (Northern Group)—Chas. O'Neill, vice president, Peale Peacock & Kerr, Inc., New York City; J. D. A. Morrow, president, Pittsburgh Coal Company, Pittsburgh, Pa.

Division I (Southern Group)—A. A. Liggett, president, Raleigh Smokeless Coal Company, Cincinnati, Ohio; J. D. Francis, vice president, Island Creek Coal Company.

Division II.—George W. Reed, vice president, Peabody Coal Company, Chicago, Ill; Jonas Waffle, secretary, Indiana Coal Trade Bureau, Terra Haute, Ind.

Division III.—Henry DeBardeleben, Birmingham, Ala.

Division IV.—E. M. Douthat, General manufacturer, Majestic Mining Company, Kansas City, Mo.

Division V.—F. V. H. Collins, president, Bair-Collins Company, Roundup, Mont.

The National Bituminous Coal Industrial Board is charged with the responsibility of observing the operation of the code and advising the Administrator and the President on such modifications as may be desirable or necessary "to stabilize and improve the conditions of the industry and promote the public interest."

Each subdivisional code authority is to be responsible for code administration and enforcement of the fair trade practice, price control and other provisions of the code in its territory, its action being subject to the approval in every case, of the presidential members. Controversies which a subdivisional authority is unable to adjust will be carried to the divisional authority, and, if necessary, to the Administrator for final settlement.

The labor boards will have jurisdiction in their respective areas over violations of labor provisions of the code and their decisions must be accepted for a period of six months, during which the National Bituminous Coal Labor Board, composed of the entire membership of the six labor boards, may review the divisional board's finding.

The National Bituminous Coal Labor Board may intervene, at the direction of the Administrator in any controversy before a divisional labor board which "involves employers and employees of more than one division," or it may likewise, review decisions of divisional boards which affect "operating conditions of more than one division" or which "involves the application of a policy affecting the general public or the welfare of the industry as a whole."

NATIONAL RECOVERY ADMINISTRATOR HUGH S. JOHNSON has announced the appointment of Colonel Robert W. Lea, Assistant Administrator, as chairman of the new Code Authority Organization Committee which has been created "to assist and advise both deputy administrators and existing Code Authorities on organization and procedure for compliance with Codes." Other members of the committee include Dr. Leo Wolman, chairman of the Labor Advisory Board; Louis Kirstein of the Industrial Advisory and the National Labor Boards; Dr. Wilson Compton, of the NRA trade association division; Blackwell Smith, associate general counsel of NRA, and Franklin S. Pollak of the NRA compliance division. Other interested government departments will be invited to advise with the committee through the following representatives: Assistant Secretary of Labor Edward F. McGrady; Assistant Attorney General Harold Stephens; Chairman C. H. March of the Federal Trade Commission, and Edwin B. George of the trade association section of the Department of Commerce.

The committee's chief functions will be to:

Submit to the Administrator proposed model administrative provisions for future codes, analyze administrative provisions in existing codes and wherever necessary, submit proposed modifications.

Consider and advise on plans proposed for Code Authority and Trade Association organization for industrial self-government.

Advise and assist Deputy Administrators in effecting the organization of their industries for Code Administration.

Study and advise on the problem of coordinating the plans of industry for code administration with those of the National Recovery Administration.

WHEN BEAK MEETS BEAK



—The Washington Post

IN ADDRESSING the Illinois Coal Mining Institute on the value of the code, Paul Weir, vice president of Bell & Zoller Coal Company, said:

"For many years the coal industry has been held up by politicians, economists, bankers, educators and others as a very bad example of poor management and poor organization. It has been a football for outsiders and a football game without rules except those of the jungle for those two insiders—the miners and the operators. Miner was playing against miner, and operator against operator, as well as miners against operators. The acute depression of the past few years intensified the fierceness of the game. Many miners and many operators became casualties. It developed into a death struggle from which none could escape. While this description specifies the coal industry, practically all other industries in the country have been experiencing the same difficulties since 1930. The need for a set of rules for such a game is obvious. The differences between miners and operators and between the operators themselves had become of such proportions that they seemed impossible of reconciliation. A rule maker in the form of the Federal Government was provided when the National Industrial Recovery Act became a law in June of this year.

"The Coal Code is the book of rules for the industry. It can be revised or amended by Presidential action. Contrary to the opinions of those who fought against the adoption of any code, this Coal Code contains a minimum of governmental regulation and interference. Anyone who has even a passing knowledge of the coal industry knows the difficulties in reconciling the views within an industry so widely spread geographically and so highly competitive from within and without. Differences of opinion between operators are difficult to adjust. Many times they are left to wear out the detriment of everyone. Some outside influence is invariably necessary to effect even a compromise. The code provides this outside influence in the NRA. A Coal Code is one problem and the administration of that code is another problem. A good code might be ruined by poor administration and a poor code might even be helpful if judiciously administered. The present code is becoming increasingly popular. The staff of the NRA is sympathetic to the problems of the industry and is anxious to have coal settle its own difficulties in the manner provided in the code. The NRA is closely observing the operation of the code. If the industry can govern itself, there is every reason to expect that it will be left to do so. If after a fair trial it becomes apparent that it cannot, we may look for more government in our business.

"Much of the difficulty in applying a code to the industry lies in the efforts of many in the industry to find ways and means of getting around the provisions of the code. If this same energy were devoted to wholehearted planning of ways and means to comply, a better situation would obtain. The whole pur-

pose of the code is to put the production and marketing on an absolutely fair competitive basis. It is not designed to take away from the efficient and give to the inefficient. Its measure of efficiency is not sharp practice and unfair methods.

"Every operator now has a book of standard rules. His operating personnel must realize that to survive they must hew to the line and develop efficient methods and produce a superior product. Wage-slashing is no longer a measure of efficiency. Price-cutting is outlawed as a substitute for efficient sales."

Lead and Zinc

HEARINGS on the codes for lead and zinc industries are anticipated early in December. Substantial changes in the codes are said to be impending, a recent review of the Joplin field says:

"When the month of November opened, prices for zinc blende concentrates was still holding at \$31, and for the first week that price was paid. Then prices began to slip, and for the remainder of the month the bulk of the concentrates sold at \$30, but some tonnage in smaller lots and that which producers were compelled to sell sometimes only brought \$28.50. The month closed with the market somewhat firmer at \$30 and less tonnage selling at \$28.50. The average for the month was \$30.30.

"The slipping market came when production was reaching the peak for the year. The second and third weeks of the month saw production at 6,700 and 7,000 tons, and prices slipped off from \$1 to \$3.50 per ton, which brought an immediate reduction in output for the last week in the month down to 2,000 tons, which will be carried over into December

with as low if not lower output. This first week of December will have in it the Thanksgiving holiday which always naturally cuts output to a certain extent and with a concerted shutdown means a very low output will be made. The production for the entire month of December will in all likelihood be held down to a much lower level than prevailed during September and October and parts of November.

"Stocks of concentrates have steadily increased for four consecutive months, but the increases have been very small each month; and even at the end of November they are less than two weeks' output, which is more than 50 percent below the normal tonnage held in the field. If by any chance weather conditions should be bad over 30 days' time, the shortage of concentrates in this district would be a serious problem indeed. It has been many years since the Joplin district entered a winter season with so small a stock of concentrates on hand. The stock available at the end of November was 11,225 tons.

"Shipments during the month were 19,083 tons, or an average of 4,771 tons per week over the four weeks' period. This was the smallest shipment since May.

"The lead market showed some weakness during the early part of the month, but sales held up to a \$47.50 to \$50 level and averaged for the month \$50 per ton. Shipments were 2,224 tons, or 555 tons per week. Stocks advanced slightly over October and closed the month at 8,965 tons. The production has been cut down along with zinc, due to the drastic curtailment in the district."—*American Metal Market.*

A bulletin of the Tri-State zinc and lead ore producers shows production to November 25 as follows:

	Zinc Concentrates			Lead Concentrates		
	This Week	Month Ago	Year Ago	This Week	Month Ago	Year Ago
Total stock (sold and unsold).....	9,628	6,715	49,773	9,976	9,418	15,587
Net reserve stock.....	11,534	5,118	48,099	10,202	9,418	15,401
Production reported*.....	1,984	4,715	3,783	270	755	281
Shipments reported.....	3,624	5,070	4,569	464	795	595
Sales reported.....	2,800	4,550	4,337	270	644	451
*Note—Flotation production included (From mine dirt and tailings).....	330	1,915	1,573			
Base price—Joplin.....	\$30.00	\$31.00	\$20.00	\$47.50	\$47.50	\$31.50

Mill Statistics	This Week	Last Week	Month Ago	Year Ago
	Week	Week	Week	Week
Number operating single shift full time.....	4	9	16	4
Number operating single shift part time.....	2	10	6	2
Number operating double shift or overtime.....	1	5	2	8
Number tailing mills operating.....	4	12	13	3
Total.....	11	36	37	17

MILL CHANGES WEEK ENDED NOV. 25, 1933

Resumed	Shut Down
None	Atlas Milling Co.
Shut Down	Admiralty Zinc Co., Nos. 2 and 3
J. P. Dines & Co., Wilson	Aul Milling Co.
Eagle-Picher M. & S. Co., Central and Bendelari	Barnsdall Zinc Co., No. 5
Evans Wallower Lead Co., Nos. 4 and 7	Baxter Chat Co.
Peru-Laclede Syndicate	Beck Mining Co.
Federal M. & S. Co., Jarrett	Black Eagle Mining Co., No. 2
Cardin M. & M. Co., Just Right	Commerce Mining and Royalty Co., Bird Dog.
Mid-Continent L. & Z. Co., No. 2	See Sah & Wilbur
Rialto Mining Corp., No. 2	Cortez-King Brand Mines Co., King Brand & New York
C. Y. Semple, Rightley	Vinegar Hill Zinc Co., Barr
Skelton L. & Z. Co., No. 5	Century Zinc Co., Goodeagle
	Vellie Mines Corp., Lion
	Mutta Milling Co.

MILL CHANGES WEEK ENDING DEC. 2, 1933

Resumed	Shut Down
Tri-State Zinc, Inc., Ottawa	Canadian M. & D. Co.
	K. F. Myers Milling Co., No. 2
	Pioneer L. & S. Co.

Iron and Steel

THE FAVORABLE SHOWING of the steel mills during recent weeks in the face of expected declines has been interpreted in trade circles as signifying the industry is resisting a downward pull. Actually, what has happened is that the accumulated backlog of public works projects and miscellaneous activities are bearing fruit and there is now reason to believe that these reserves will provide progressively increasing nourishment. It is to be observed that the backlog of future business is being constantly augmented, directly and indirectly by government activities. These developments are important to the mining industries as a whole as most of the projects involve various metals. Statistics issued during the week showed a large increase in public works awards and *Iron Age* announced structural steel lettings as the highest since the first week in May. A potential demand was also indicated in the Administration's announcement of its work relief program to take 4,000,000 persons off the relief rolls and in the allocation of funds for the initial construction of seadromes on the Atlantic, which, if proved feasible, means orders for 150,000 tons of steel.

THE INDIRECT EFFECT of higher costs due to NRA was shown in the recent advances of \$1 a ton in pig iron prices for New York and eastern Pennsylvania. Although wages are not a sufficiently important element in pig iron production costs to cause a material increase, a substantial rise in raw material costs could have a strong effect. Because of the increased costs under the coal code, coal prices have advanced and consequently coke, which forms so important an element in pig iron, has also increased. Connellsville furnace coke has increased from \$1.75 per ton in June to \$3.75, the last advance, which took place last month, being \$1.25. It has been estimated that this last rise was sufficient in itself to raise the price of pig iron \$1.

Skills Review says that preliminary figures indicate that iron ore shipments from Minnesota by boat during the season of 1933 totaled 14,952,972 gross tons. This compares with 2,250,074 tons in 1932 season, and 17,420,101 in the 1931 season. It will be observed that a long swing toward normal conditions of the iron ore industry was made this year, and there is every indication that it will continue into the 1934 season.

Boat shipments of iron ore from Minnesota by ranges in 1933 were approximately as follows, compared with 1932:

Minnesota Iron Ranges	Gross Tons 1933	Gross Tons 1932
Mesabi	13,490,061	1,934,621
Vermilion ...	740,403	216,741
Cuyuna	722,498	98,712
Totals	14,952,972	2,250,074

HAVE YOU HEARD—?

ACCORDING TO THE Periodical Publishers Institute, their code is attempting to cover between thirty-five and forty thousand establishments employing 350,000 persons, which have an annual turnover of approximately \$2,600,000,000.

THE COUNTRY'S retail stores have placed orders for three billion dollars for fall and Christmas merchandise, which is more than five hundred million dollars in excess of orders placed in 1932.

NINETEEN THIRTY-TWO SHIPMENTS of Lake Superior iron ore set a precedent with total shipments of three and one-half million tons. In a 23-year period, from 1907 to 1929, inclusive, there were but four years in the thirty-million-ton category, while five years were in the sixty-million-ton class. It is estimated that 1933 shipments will be more than twenty-five million tons.

H. M. HALSTEAD, Assistant Administrator of NRA, proposed a copper code which provided for minimum and maximum prices, the minimum to be determined by average out of pocket, or cash cost of producing copper, and the maximum by average cash cost plus depreciation and a reasonable profit.

IT IS ESTIMATED that bootleg and smuggled liquor have cost the American people \$36,025,000,000, according to Clark Warburton, in "Economic Results of Prohibition," one of Columbia University's studies in economics, history and law.

SECRETARY OF LABOR FRANCES PERKINS has reported to the President that a survey of industrial disputes show that in the six summer months of 1921 there were 1,453 strikes and lockouts, while for the same period of 1933 there were 900. The number of employes involved in 1929 were 895,000, as against 584,000 this year. The President believes that this situation is indicative of an improvement in the unemployment status.

THE CONSUMERS ADVISORY BOARD OF NRA sees no reason why the coal code should bring about rise in the price of fuel to domestic consumers. The board's analysis states that "About half of the retail price of soft coal goes to the retail dealer, while less than a third goes to the railroad, and of the rest probably seldom more than 20 percent goes to the mine operator."

ACCORDING TO A SPECIAL RELEASE from NRA, reports received by it from local committees, chambers of commerce, and employers generally show a steady gain in employment and pay rolls in communities throughout the country. They estimate that more than four million workers have been added to pay rolls since last March.

CHARLES S. SLOCUMBE, Assistant Director of Personal Research Federation, advocates that future employment shall be scientifically controlled through the study of occupational distribution. His plan has been presented to the Department of Labor.

MALCOLM MUIR, Deputy Administrator NRA, is attempting to develop a master code for machinery manufacturers. M. A. P. I. has already drawn a model of such a code. Manufacturers' units already submitting codes include hydraulic pumps, conveyors, and compressed air. Deputy Administrator King will have charge of the development of the master code.

MAJOR W. W. INGLIS, president, Glen Alden Coal Company, says that American anthracite operators will seek a higher tariff on coal from Russia. They believe the domestic market is endangered anew by Soviet recognition.

CHARLES F. HUBER, chairman of the code committee for the anthracite industry, in presenting their code to the administration, stated that for over 30 years the anthracite industry has been operating under labor contracts embodying in principle the ideals of the Recovery Act and paying the same wage rates as were paid during the period of the Nation's greatest prosperity.

NATIONAL MANUFACTURERS ASSOCIATION asserts that contracts guaranteeing employment exclusively to members of any one labor organization violates the provisions of the National Recovery Act.

S. H. PATTERSON, professor of economics of the University of Pennsylvania, believes that adoption of a program of inflation would bring an unprecedented drive for public ownership of utilities.

THE CHAMBER OF COMMERCE OF THE UNITED STATES will investigate NRA program with an idea of promoting radical changes in the present set-up. They believe that the NRA codes are unenforceable.

SECRETARY OF COMMERCE DANIEL C. ROPER, in radio address stressed vital need for long-range planning on an international as well as national scale. He said, "We must learn that agencies and conditions which disrupt or embarrass the flow of trade must be better controlled, both at home and abroad."

NEW YORK STATE TAX REVISION COMMITTEE is considering startling proposals for tax revision, among them being a compact of States with the Federal Government to effect a closer coordination in the adoption of an administration of State and national revenue programs. A resolution before the committee proposes Federal sales taxes, motor fuel and liquor taxes shared with the States, and proposes the Federal Government as the State and national collective agency.

AN ASSOCIATION to be known as "The Association of American Tories" has been formed for the purpose of keeping the Nation from imitating Russia and "to raise the drooping head of the American eagle on the dollar bill." Among its objectives are discouragement of any tolerance toward the present definition of liberty; to prevent American people, their lives, property, and savings from being vivisectioned in the executive laboratory; to educate our citizens to read the history of dictators; to foster a "back to college" movement for our statesmen; and to remember that our national honor is our individual honor, and that inflation means repudiation of our obligations.

WAGES LOST as the result of a thousand, one hundred strikes during the last four months are estimated by the National Association of Manufacturers to aggregate about \$24,000,000.

TOTAL FINAL FIGURES of paid admissions to the Century of Progress Exposition at Chicago were \$22,320,456.

PROFESSOR LAWN, presiding at the annual meeting of the Johannesburg Consolidated Investment Co., Ltd., according to the Boston News Bureau, said "It is estimated that the Government of South Africa will take over 70 percent of the increased gold-mining profits in taxes." He pointed out that the Government is offering better tax conditions to new mines starting work than to existing mines.

GERMAN BUSINESS CONCERNS, according to press dispatches, are said to have contracted with Russia for the purchase of about \$492,000,000, mostly for machinery, from 1930 to 1932.

MODERN MINING PRACTICE

Cost of Equipping and Developing a Small Gold Mine in Arizona

Digest of U. S. Bureau of Mines Information Circular 6735, by David C. Minton, Jr., Consulting Engineer

THIS PAPER describes in detail the cost of equipping and developing the Golden Belt mine, Yavapai County, Ariz. These costs should be typical of the average small gold mine in central Arizona which has been equipped with used machinery at a minimum of capital expenditure.

The quartz vein on the Golden Belt property varies in width from a few inches to 3 ft. and carries from \$5 to \$40 in gold per ton and from 1 to 10 ozs. of silver. In the upper portions of the mine, above the water level, the vein is highly oxidized and contains the oxides of iron and lead and some free gold. Below the water level, or 50 ft. below the surface, the ore is almost entirely sulphide and is composed of auriferous pyrite and galena. The galena carries the greater part of the gold.

Until the past few months the development of the vein has consisted of extending the incline, turning indiscriminately to follow the ore but continuing down on the vein. Recently an incline has been sunk 150 ft. on a dip of 14°, extending the upper part of the shaft in a straight line.

The mill is a simple flotation plant of 50 tons maximum daily capacity, installed as a pilot mill to help defray costs of mine development. The operation is intermittent, depending on the mine development output. The ore is very amenable to treatment by flotation methods, and a concentrate is produced by a single rougher operation.

Some development work had been done and some equipment was on the ground when the present company took over the property. An appraisal has been made of the value of this development work and equipment. These figures are shown in the accompanying tabulation. The cost of new equipment, amount and cost of new development, milling costs, transportation, overhead, and total costs are also shown.

SUMMARY OF COSTS

	Appraised value as taken over May 1, 1931	Disburse- ments to Apr. 1, 1932	Total
Camps:			
Buildings	\$2,000.00	\$500.00	\$2,500.00
Equipment and supplies.....	2,755.00	752.00	3,507.00
Roads	100.00	.....	100.00
Totals	\$4,855.00	\$1,252.00	\$6,107.00
Mines:			
Equipment and supplies.....	\$3,362.00	\$2,531.08	\$5,893.08
Development—			
Direct labor and repairs....	6,876.00	6,320.15	13,196.15
Repairs off property.....	.....	142.95	142.95
Power .....	.....	795.06	795.06
Totals	\$10,238.00	\$9,789.24	\$20,027.24
Transportation:			
Truck	\$100.00	\$350.00	\$950.00
Labor and supplies.....	.....	1,192.00	1,192.00
Totals	\$100.00	\$2,042.00	\$2,142.00
Mill:			
Buildings and bins.....	\$2,800.00	\$50.00	\$2,850.00
Equipment and supplies.....	2,855.00	1,666.16	4,521.16
Repairs off property.....	.....	316.35	316.35
Labor, construction, and milling.....	.....	3,023.88	3,023.88
Power .....	.....	1,590.12	1,590.12
Totals	\$5,655.00	\$6,646.50	\$12,301.50
Overhead	\$1,100.00	\$3,364.29	\$4,464.29
Total costs	\$21,948.00	\$23,094.03	\$45,042.03

Effect of Particle Size on Flotation of Sphalerite

Digest of Article by R. L. Kidd and W. A. Wall, Respectively Ore Dressing Engineer and Research Fellow (1933), Utah Engineering Experiment Station, University of Utah, Salt Lake City, in "Mining and Metallurgy," October, 1933

IN PRESENT-DAY FLOTATION practice, grinding of the flotation feed is carried to extremely fine sizes, 70 to 80 percent minus 200-mesh being customary. The greatest flotation losses occur in the coarsest and finest sizes, but the losses in the very fine sizes are, of course, much the more important because of the large proportion of fines in the feed. These losses are particularly high in zinc ores so a study of the effect of size on the flotation of sphalerite has been made.

The mineral used in these experiments was a pure sphalerite, especially free from copper, from the Joplin district in Missouri. The sizes coarser than 200-mesh were separated by screening, the sized mineral then being deslimed on a Wilfley table. The sizes finer than 200-mesh were obtained by water elutriation; particles finer than 6.5 microns could not be obtained with the apparatus used.

In all the flotation tests the mineral was first treated with a one-normal solution of hydrochloric acid to remove any oxide film. The acid was then filtered off and the mineral washed with copper-free distilled water until the filtrate had the same pH as the distilled water. Cresylic acid was used as the frother, potassium ethyl xanthate as the collector, and copper sulfate as the activator.

To determine the correct amount of frother to use to obtain the best froths, a series of tests was made on the various sizes with cresylic acid alone. It was found that the best amounts to use were 0.15 lb. cresylic acid per ton of mineral for sizes greater than 37 microns, 0.1 lb. for sizes between 37 and 13 microns, and 0.05 lb. for finer sizes.

Another series of tests was made to determine the amount of copper sulfate to use to obtain maximum recovery. In these tests the desired amount of copper sulfate was added to the pulp in the flotation cell and the mixture was agitated for one minute. Potassium ethyl xanthate (0.15 lb. per ton) was then added and the mixture was again agitated for one minute. Finally 0.15 lb. per ton of cresylic acid was added and collection started; a two-minute collecting period was used. The recoveries obtained using different concentrations of copper sulfate indicate that the best amount of copper sulfate to use with particles coarser than 104 microns is 0.1 lb. per ton; with particles minus 104 and plus 74 microns, 0.2 lb. per ton; and with particles finer than 74 microns, 0.3 lb. per ton.

The effect of the concentration of collector was next investigated. The same procedure as above was followed, using 0.15 lb. per ton of cresylic acid and the amount of copper sulfate found above to give the best result for the particular size. Here the best recoveries are obtained with 0.15 lb. per ton of potassium ethyl xanthate for particles larger than about 37 microns, and with 0.20 lb. per ton for particles smaller than this.

A study was also made of the length of collecting period upon recovery. The reagents used were cresylic acid, 0.15 lb. per ton; copper sulfate, 0.20 lb. per ton; and potassium ethyl xanthate, 0.15 lb. per ton. The results show that the recovery increases with the length of the collecting period, although with sizes above 74 microns practically complete recovery is obtained within two minutes. The curves for the finer sizes show little tendency to flatten out, indicating that with increased collecting time there would be greater recovery. In practice this would mean more flotation cells. Apparently, the finer sizes will float, but the load carried by the froth in unit time decreases with decrease in particle size.

Backfilling at the Scranton Coal Company

Digest of Article by Henry A. Dierks, Mining Engineer, James H. Pierce & Co., in "Coal Age," August, 1933

THE area under consideration comprises about 1,200,000 sq. ft. Combined thickness of the two beds to be robbed is 18 ft., and on the basis of an 85 percent recovery of the existing pillars, this area will yield about 200,000 tons. It was estimated that only 330,000 cu. yds. of material would be required to fill all existing and newly created voids.

Of major weight in the final decision to employ backfilling was the presence of an extensive accumulation of sand and gravel near the main hoisting shaft, where the flushing plant was to be built. However, it was deemed expedient to mix this material with breaker refuse, which is shipped to the flushing plant from other collieries in railroad cars.

The crushing plant consists of a triple-unit jaw-crusher—capacity, 35 tons per hour—driven by a belt from a 100-hp. motor. The largest boulders fed to the crusher are 12 in. in diameter; the discharge is material of 1½ in. and below. Broken material leaving the crusher is raised to the vibrating screen by a continuous bucket elevator, where the oversize is removed before the material goes into the storage hopper. The lower end of the storage hopper is fitted with a circular open funnel which centers over a turntable feeder.

Directly underneath the feeder is the mixing cone, into which the material falls uniformly from the entire circumference of the feeder disk. Diameter of the lower end of the cone is 6 in., and it is connected by a 30-deg. gooseneck to the vertical pipe line through a borehole into the mine.

The flush line comprises the bore-hole column and the two horizontal pipe lines in the veins. The vertical line consists of 6-in. extra heavy steel pipes freely suspended in an 8-in. bore-hole lined with a steel casing down to the rock. With this arrangement, the column can be replaced in whole or in part when worn out.

Horizontal lines are composed of 8-in. "Universal" cast-iron pipes in standard 6-ft. lengths. Connections are made with iron-to-iron hub-and-spigot-type joints, each held together by two bolts passing through lugs cast onto the ends of each pipe. This type of joint requires no packing, and permits contraction, expansion and unusual deflection without leakage. A standard length weighs 220 lbs., and can be handled easily by two men. While it is too early to state definitely the life of this pipe, recent inspection of a certain section showed only slight wear after handling about 60,000 cu. yd. of flushing material mixed with acid mine water. (The life of both the pipe lines and flushing plant is expressed in terms of cubic yards handled.)

Each horizontal flush line ends in a number of branches which are connected to the main line by means of "Y's" and valves, or by breaking the lines and inserting an elbow. Gate valves do not wear well in a flush stream carrying 1½-in. material, and therefore are used sparingly. The cast-iron pipe line is carried into the chamber to be flushed, and conducts the flushing stream to the point of deposit. In flat beds, the flush can not be allowed to run free if water and air pockets between roof and flush are to be avoided. The pipe line is introduced, wherever possible, at the highest end of a chamber, thus utilizing the small pitch of the vein. As all pillars are to be recovered, great care is taken to backfill tightly to the roof. As the material fills up against the roof, one length of pipe after the other is taken off until the whole chamber is filled. An 8-in. flexible rubber pipe, attached to the end of the flush line, has worked very satisfactorily in directing the flush in any desired direction.

Oil from Coal

Digest of Article in "Colliery Guardian," July 21, 1933

THE FOLLOWING official statement was issued by Sir Harry McGowan, chairman of Imperial Chemical Industries: For six years Imperial Chemical Industries, Ltd., have conducted research on the hydrogenation of coal, tar, and other materials. In view of the undertaking given in the House of Commons by the Prime Minister, the directors of Imperial Chemical Industries, Ltd., have now authorized a scheme for the erection of a large commercial plant, which is to be located at the company's works at Billingham-on-Tees, County Durham, where special facilities are available. An initial output of 100,000 tons a year of first-grade petrol is aimed at by processing 400 tons of coal a day.

New Lead Refinery of U. S. Smelting in Operation at Midvale, Utah

Digest of Article from "Engineering and Mining Journal," October, 1933

COMPLETE SUCCESS is attending operation of the new lead refinery of the U. S. Smelting, Refining and Mining Company at Midvale, Utah, and, for the first time in the history of the mining industry of the State, a product of Utah mines and smelters is being converted into refined metal within the boundaries of the State. The plant has an output capacity of 6,000 tons per month and is the largest lead refinery west of Omaha, Nebr.

The method of recovery used at the new refinery is the Parkes process. Lead concentrate from the company's flotation plant at Midvale is smelted in the adjoining smelter of the company, and then conveyed in molten form from the blast furnaces to the refinery by electric tram through a short tunnel.

In the refinery, an overhead travelling crane picks up the 5-ton ladles and dumps the molten bullion into the 235-ton drossing kettles. Both the kettles and ladles were designed by the U. S. Smelting, Refining and Mining Company, who embodied several new principles. Kettles are built of rolled and welded steel. A brick corbel has been built in the setting of each kettle to give uniform draft and heat distribution and to eliminate all bustle pipes from the refinery floor. Tests of heat distribution show that the variation within the kettle at various points does not exceed 10 degrees.

Other new features embraced in the building of the plant include a mechanical dross-skimming pan, operated by a crane, and new lead pumps, also designed by the company, which have already proved their efficiency. The dezinking machinery is turning out zinc chloride of high quality, and the desilvering machine, which also represents a departure from ordinary practice in that it is operated by direct-connected motors, is specially built to withstand high temperatures. A parting plant, where the gold and silver are separated and refined by the electrolytic process, is operating satisfactorily.

Safety Practices and Achievements at the Columbia Mine of the Columbia Steel Company

Digest of U. S. Bureau of Mines Information Circular 6743, by D. J. Parker, District Engineer, U. S. Bureau of Mines Safety Station, Salt Lake City, Utah

THAT the problem of reducing coal-mine accidents in Utah to a minimum is not an insuperable one is emphasized by the fact that the Columbia mine operated from November 6, 1931, to March 31, 1933, with but two lost-time accidents, involving a total of 62 lost days.

During the period mentioned 278,963 net tons of coal were produced and 310,752 man-hours worked. The number of accidents per million man-hours worked, or the frequency rate, is 6.43.

The number of days lost per thousand man-hours worked, or the severity rate, is 0.19.

The number of days lost per 1,000 tons of coal produced is 0.22. The corresponding figure for this mine for the fiscal year 1931-32 is 0.36. For all Utah mines that is the best record for this period. On the same basis the poorest record of any mine for this fiscal year is 222.30, while the average for the state is 48.60.

This record is interesting and exceptional and proves definitely that more than just ordinary effort is being put forth at this property to prevent accidents. A discussion of the channels through which this accomplishment was made possible is of equal interest. The safety program at the Columbia mine is neither complicated nor expensive and is well within the reach of the small as well as the large operation.

Wage Costs in the Mineral Industries

Digest of Article by Paul M. Tyler, Chief Engineer, Rare Metals and Nonmetals Division, U. S. Bureau of Mines, from "Mining and Metallurgy," November, 1933

ROUGHLY, one-half the value of mineral products at mines or quarries must be spent for wages. In view of the steady increase in hourly wages that continued for several decades prior to the onslaught on the recent depression, it is perhaps surprising to discover that labor's share of the gross proceeds of the mining and quarrying industries of the United States declined to 46.8 percent in 1929, compared with 52.2 percent in 1919 and 53.2 percent in 1909.

Without attempting to discuss the influences of increasing mechanization, improved mining methods, and, above all, better management, this paper presents a statistical analysis of the wage element in the cost of production of various mineral commodities from a broad, national viewpoint. The term "wage cost" relates only to wages actually paid directly in the operation and does not cover wages originally spent in connection with the production of purchased materials, equipment, power, and supplies.

TABLE 1.—PERCENTAGE OF TOTAL VALUE OF OUTPUT EXPENDED FOR WAGES BY SPECIFIED INDUSTRIES IN 1929, 1919, AND 1909

	Percentage of total value of output expended for wages		
	1929	1919	1909
All industries	46.8	51.2	53.2
Anthracite coal	59.8	57.8	61.9
Bituminous coal	59.5	59.6	68.7
Copper	25.8	36.6	36.7
Iron ore	20.7	34.7	27.8
Lead and zinc	34.9	40.6	33.4
Gold and silver, lode	49.7	40.5	36.8
Gold, placer	25.7	20.4	26.1
Mercury	49.1	45.9	46.9
Manganese	33.1	49.6	49.1
Minor metals	22.7	43.2	39.7

Ordinary good business judgment dictates that a plant should be scaled to the size of the natural market as well as to the known size of the orebody or deposit but the statistical proof of the advantage of mass production in large plants is overwhelmingly conclusive. Table 7 demonstrates the fact that workers in large plants tend to be substantially better paid than those employed in small operations. The latter conclusion may be questioned . . . but taken in conjunction with other data indicating the relative inefficiency of small plants the natural deduction is that such operations as a class are unprofitable.

The data used in this paper are calculated from reports of the Bureau of the Census, mostly from tables recently published in the Census of Mines and Quarries for 1929, prepared under the supervision of F. E. Berquist.

TABLE 6.—PERCENTAGE OF TOTAL VALUE OF PRODUCTS EXPENDED FOR WAGES CLASSIFIED ACCORDING TO VALUE OF ANNUAL OUTPUT PER ENTERPRISE, 1929

Industry	Value of Output per Enterprise					
	\$20,000 to \$49,999	\$50,000 to \$99,999	\$100,000 to \$249,999	\$250,000 to \$499,999	\$500,000 to \$999,999	\$1,000,000 to \$2,499,999
All industries	49.8	47.4	48.4	50.0	50.8	48.0
Anthracite coal	76.3	60.5	63.2	67.7	64.5	56.9
Bituminous coal	64.9	64.8	63.6	60.7	59.3	57.8
Copper	88.2	50.1	50.9	55.6	58.4	32.0
Iron ore	53.2	42.9	47.5	32.6	28.6	23.9
Lead	76.1	50.2	42.4	40.4	44.3	44.8
Zinc	51.5	54.4	38.1	31.1	31.4	38.9
Gold, lode	82.8	56.4	64.9	50.9	*	*
Basalt	41.8	35.3	30.2	27.6	†	21.4
Silver	58.9	64.6	44.6	51.7	†	37.6

* Included in \$5,000,000 and over.

† Included in \$1,000,000 to \$2,499,999.

TABLE 7.—AVERAGE EARNINGS PER WAGE EARNER CLASSIFIED ACCORDING TO VALUE OF ANNUAL OUTPUT PER ENTERPRISE, 1929

Industry	Value of Output per Enterprise					
	\$20,000 to \$49,999	\$50,000 to \$99,999	\$100,000 to \$249,999	\$250,000 to \$499,999	\$500,000 to \$999,999	\$1,000,000 to \$2,499,999
All industries	1,010	1,051	1,133	1,224	1,333	1,453
Anthracite coal	1,317	1,305	1,422	1,383	1,591	1,604
Bituminous coal	880	955	1,067	1,183	1,302	1,402
Copper	1,369	1,121	1,450	1,607	1,455	1,618
Iron ore	965	1,187	1,325	1,268	1,502	1,485
Lead	1,335	1,306	1,667	1,483	1,600	1,758
Zinc	1,304	1,197	1,308	1,350	1,320	1,454
Gold, lode	1,609	1,553	1,657	1,623	*	*
Basalt	1,399	1,284	1,451	1,570	†	1,672
Silver	1,465	1,693	1,704	1,806	†	1,667

* Included in \$5,000,000 and over.

† Included in \$1,000,000 to \$2,499,999.

Lump Coal in Mechanical Mining at Old Orient

Digest of Article from "Coal Age," October, 1933

MECHEANIZATION of Old Orient began in earnest during the summer of 1931. Equipment of a kind expected to meet most closely the demand for quality coal under conditions encountered in this mine has since been installed. At the present time there are five Clarkson mechanical loaders in operation; two are on development work and three in room work. Rooms and entries are undercut and center sheared by Jeffrey 29 LE or Sullivan CLU track-mounted machines. Holes are placed with Jeffrey A-6 and Dooley Brothers No. 700 coal drills.

The coal seam averages about 9½ ft. in thickness but only 8 to 8½ ft. of this thickness is mined, the remainder being left as roof. About 2 ft. from the bottom occurs the blue-band parting, which varies in thickness from a knife edge to 1½ in. This impurity is loaded out with the coal and separated in the preparation plant.

A high yield of lump coal is demanded and, although shearing is practiced, blasting of the faces must be light. Four shot holes are used in entry places and six in room places. All holes in a face are placed regularly from one set-up of the drill posts. In both narrow and wide places two snubber shots are employed. These are started about 4 ft. from the bottom, midway of the shear cut and rib, and are angled outward and downward. Usually ¼ lb. of permissible powder is charged into each snub hole. Approximately 8 ft. above the bottom is a natural parting, and a few inches below this parting the breaker shots are placed, two in narrow places, and four in wide places. These holes are equally spaced between rib and shear cut and are drilled horizontally and turned toward the rib. One-half to 1 lb. of explosive is placed in each breaker hole.

This light blasting, which leaves a certain amount of mining-out to the loading machine, produces practically the same percentage of domestic coal from the loading machines as from hand methods. The loader feeds its way to the back of the cut, following the line of the shear cut. This opening having been made, the standard coal on both sides can be turned and rolled over in masses, after which little digging is required.

In entry work a loading-machine crew generally is composed of 10 men, and in room work of 12 men. A crew in a wide place is composed of a motorman, a triprider, two trackmen, one timberman, two drillers, two cutters, a loading-machine runner, a helper, and a third man, who prepares the place before the loading machine goes in and makes it ready for the cutting machine after the loading machine moves out, and in his spare time works around the loading machine cleaning up the spillage.

PERSONALS

J. B. WARRINER, president, Lehigh Navigation Coal Company, and president, the American Mining Congress, attended the hearing on the anthracite code in Washington, November 17.

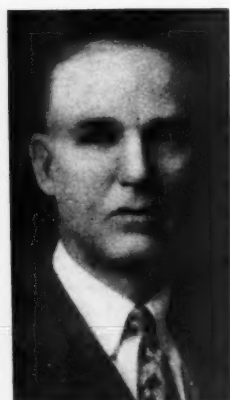
GEORGE R. DRYSDALE has been appointed comptroller of the Phelps Dodge Corporation, and A. W. Engelder has been appointed as assistant general auditor for this company.

OLIVER J. GRIMES has been named executive assistant to George H. Dern, Secretary of War. Mr. Grimes is well known to the coal industry as managing director of the Committee of Ten.

J. E. LEE has been appointed general manager of the Sheridan Wyoming Coal Company.

E. S. McCULLOUGH has been appointed umpire in labor matters affecting the Northern West Virginia district, being the choice of both mine operator and miner.

J. D. FRANCIS, vice president, Island Creek Coal Company, is in Europe on several weeks' vacation trip.



Eugene McAuliffe

EUGENE MCAULIFFE, president, Union Pacific Coal Company, is one of the speakers at the special conference called by the American Mining Congress at the time of its convention on "How Can the Bureau of Mines Effectively Serve the Mining Industry?"

CHARLES E. DUNLAP, president, Berwind White Coal Mining Company, is in Europe.

PERCY C. MADEIRA, of Madeira-Hill & Company, at his own request has been relieved of active duties and elected as chairman of the board of directors.

T. H. O'BRIEN, Inspiration Consolidated Copper Company, Inspiration, Ariz., was in Washington during the month for conference with officials in regard to relief work in his State.

C. F. HUBER, president, Lehigh & Wilkes-Barre Coal Company, is chairman of the code committee for the anthracite industry, and as such made the formal presentation at the recent hearing before Deputy Administrator Simpson.

JOHN GILBERT, who has served in the capacity as secretary, vice president, and treasurer of Madeira-Hill & Company, was recently elected to its presidency.

HOWARD N. EAVENSON is the uncontested nominee for the presidency of the American Institute of Mining and Metallurgical Engineers.



Jesse B. Warriner

CHAS. F. HOSFORD, JR., has resigned the presidency of Butler Consolidated Coal Company.

J. P. WILLIAMS, JR., president of the Koppers Coal Company, was recently made vice president of the Koppers Company.

A. D. CARLTON, coal agent of the Cleveland Cliffs Iron Company, is a recent Washington visitor in connection with matters relating to the bituminous code.

WILLIAM EMERY, JR., president of Cambridge Collieries Company, was recently elected chairman of Subdivisional Coal Code Authority for Ohio. W. L. Robinson, president of the Youghiogeny & Ohio Coal Company, was elected vice chairman, and R. L. Ireland, Jr., vice president of Hanna Coal Company, was elected secretary and treasurer.

JOHN T. RYAN, vice president, Mine Safety Appliances Company, and chairman, Manufacturers Section, of the American Mining Congress, has called the annual mid-year meeting of the board to meet in Washington, December 15, at which time decision concerning the 1934 exposition will be made.

WAYNE H. PERRY has been elected an assistant secretary of the General Electric Company.

SAMUEL D. WARRINER, prominent anthracite operator, served as industrial adept for the anthracite code hearing.

HOWARD I. YOUNG, president of the American Zinc, Lead and Smelting Company, and a director of the American Mining Congress, was in Washington on November 21.

ROBERT S. PALMER, secretary of the Colorado Mining Association, represented producers of his State at the recent meeting of gold operators in San Francisco, Calif.

GEORGE H. CHARLES has resigned as secretary of the American Iron and Steel Institute to enter private consulting business.

W. VAL DECAMP has joined the staff of the Anglo-American Mining Corporation, where he has been placed in charge of production at the Yellow Aster Mine.

POPE YEATMAN, consulting mining engineer, will receive the William Lawrence Saunders gold medal for distinguished achievement in mining. The award will be made by the American Institute of Mining and Metallurgical Engineers.

JOSEPH C. O'MAHOONEY has been appointed U. S. Senator from Wyoming, filling the vacancy caused by the death of the Hon. John B. Kendrick. Mr. O'Mahoney is a native easterner, following the newspaper profession in New York City, and was later city editor for a Cheyenne daily. He is also a graduate lawyer.

DONALD R. RICHBERG, general counsel for the National Recovery Administration, will present his views on readjusting industry and Government to 1933 conditions at the Thirty-sixth Annual Meeting of the American Mining Congress.



John T. Ryan

NEWS OF MANUFACTURERS

TWO IMPROVED Allis-Chalmers vibrating screens are now available for sizing crushed stone, slag, ore, sand and gravel, coal and coke.

Style "B" Centrifugal screens (Bulletin 1475) are built with one, two, or three decks in sizes from 2 x 6 ft. to 5 x 14 ft. and are adaptable for heavy loads and the maximum range of material size. Screening is by a rapid mechanically-produced eccentric motion, the intensity of which is positive regardless of tonnage feed to the screen. The screen body "floats" on balance springs reducing power and the load on the bearings; the entire screen is cable and spring suspended.

The "Aero-Vibe" screen (Bulletin 1474) "floats in the air" suspended from the supporting structure by cables and springs. A rapid, adjustable, vibrating motion is produced by counterweighted wheels mounted on the drive shaft attached to the screen body. Single and double deck "Aero-Vibe" screens are available from 1½ x 3 ft. to 4 x 8 ft. Sizes for handling medium to fine size materials, and for limited tonnage.

FOR protecting motor-driven and other types of rotating machinery from breakdowns due to overheated bearings, The Electric Controller & Mfg. Co., 2726 E. 79th St., Cleveland, Ohio, announce the E C & M Bearing Thermostat. These Thermostats are particularly well suited for use in connection with automatic pumping stations, motor-driven fans, automatic electric substations, conveyor systems, refrigerating machines, compressors, etc.

A REVISED 12 page circular describing and illustrating gas electric sets for every application has been issued by the Westinghouse Electric and Manufacturing Company. The publication describes the outstanding features and applications of these sets ranging in sizes from 800 watts to 100 kv-a.

Copies of this publication C. 1959-A entitled "Gas Electric Sets for Every Application" are available at the nearest district office or direct from the Westinghouse Electric and Manufacturing Company, East Pittsburgh.

LINK-BELT models K-38, 44 and 55 are covered in three attractively illustrated eight-page 8½ in. by 11 in. folders recently issued by Link-Belt Company, 300 West Pershing Road, Chicago, on crawler-mounted shovel, crane, dragline equipment. Lifting capacities, clearance diagrams and other data are given. Copies will be mailed upon request.

THE MANCHA Storage Battery Locomotive Company, 4850 South Halsted Street, Chicago, Ill., has made some radical improvements in the Little Trammer locomotive which they originated about eight years ago.

The new Little Trammer, called the Type B, is illustrated in Figure 1. It provides ample space for the operator and gives him better protection against wrecks and collisions. The operator's compartment now folds up and stands vertically when in the caging position, as shown in the accompanying illustration.

Internal improvements in the locomotive have been made which make it more accessible and provide larger wearing parts, all of which result in doing considerably more work than formerly with each battery.



ADMIRAL BYRD, starting on his second expedition to the Antarctic, selected a Cletrac crawler tractor to do his heavy hauling at his base of operations.

Months ago a representative of the Second Byrd Antarctic Expedition visited the Cleveland Tractor Company, which has been manufacturing crawler tractors for 16 years, and described the conditions that a tractor would meet in Little America.

Snows drifted high by winds of hurricane force and extremely cold temperatures will be some of the conditions the tractor will face. This is the second time that a Cletrac has gone into the frigid zone with a scientific expedition. Sir Hubert Wilkins took a Cletrac with his expedition in 1929.

AN AUTOMATIC FEEDING DEVICE for drifter drills which makes hand cranking unnecessary has been introduced by Ingersoll-Rand Company, 11 Broadway, New York City. In addition to eliminating the need for constant attendance of the drill and thereby freeing the operator for other duties, the Auto-feed, as it is known, increases the production per drill.

Other advantages claimed for the Auto-feed are: greater over-all footage per man shift; better control of the drill in fitchery ground; it pulls tightly held steels that are difficult or impossible to extract by hand cranking; it will operate in close quarters and permits placing edge holes where blasting will prove most effective.

Drills equipped with Auto-feed are but slightly longer and heavier than hand-cranked models. There is no increase in air consumption. The construction is simple and upkeep cost is low.

MOTORS, control, and an exhibit from the House of Magic will feature the display of the General Electric Company at the Fourteenth Exposition of Chemical Industries, to be held at the Grand Central Palace, New York, December 4 to 9, 1933. A cut-away gear-motor, a gear-motor in operation with tachometers showing the relative speeds at the drive and driven ends, a Thyatron-controlled motor in operation, and a splash-proof motor operating under a spray of water in a glass case will comprise the special exhibits to be on display in the company's space.

A MASTER code will be asked of the numerous units in the heavy machinery industry, Malcolm Muir, Deputy Administrator, stated, the purpose being to tie in unit codes with central rule for heavy tools. To this end conferences will be held with officials of the M. A. P. I. who have already drawn a model of such a code.

Little delay is anticipated in promulgating this master code, and the work in connection therewith will be placed in the charge of Deputy Administrator King, who will work with Assistant Deputy Col. Horner. The latter has heard the sub-codes scheduled so far, which include agreements for the hydraulic pump, Diesel engine, conveyor machinery, compressed air and heat exchange industries, some of which are in operation. No change is anticipated in the codes already approved, Mr. Muir said.

O. C. Hoffman, Pres. Established 1902 L. H. Hoffman, Treas.

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We Look Into the Earth
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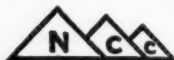
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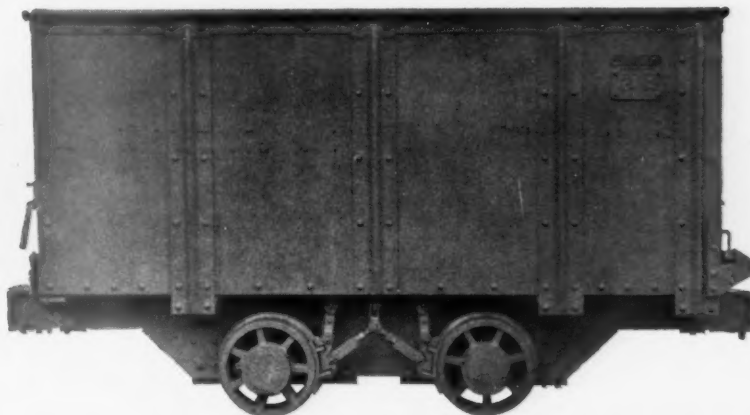
SAN FRANCISCO

PENNSYLVANIA MINE STEPS-UP OUTPUT WITH NEW BETHLEHEM ALL-STEEL CARS

**Steel Construction adds 34 cu. ft. to capacity of cars
without increase in overall size**



Arrangement of hand brakes. This car has double, shoe-type brakes and double trips, operated from either side.

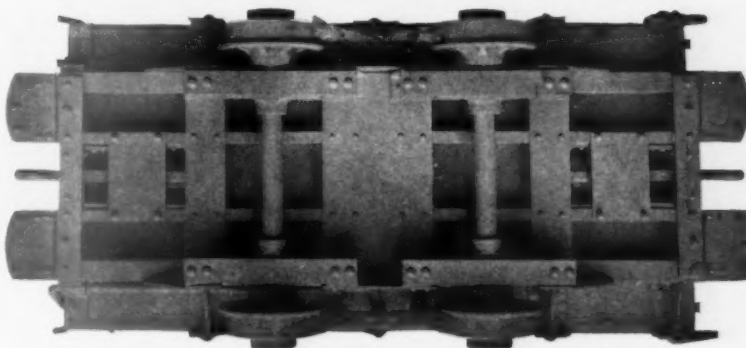


One of the Bethlehem All-Steel 166-cu.ft. Mine Cars that have increased the output of a large Pennsylvania mine enough to pay for themselves in 2½ years.

When a large coal mining company in Pennsylvania decided to increase their output, the first consideration was the modernization of their mine cars. The existing equipment consisted of 132-cu.ft. composite cars with wood underframes and plain bearings. Problem: To increase car capacity without increasing the overall dimensions.

Bethlehem engineers, collaborating with the coal company engineers, made a study of operating conditions. Result: An all-steel, end-dump, mine car holding 166 cu.ft. was developed. This increase of 34 cu.ft. in capacity as compared with the older cars was obtained *without increasing the overall size.*

The new all-steel cars with their built-up steel underframes are much stronger than the old, com-



Built-up steel underframe of Bethlehem 166 cu.ft. capacity Steel Car.

posite-type cars. They have roller bearings, making haulage easier, reducing power consumption, and greasing. In addition, the new cars have spring draft gears to absorb buffing stresses, a vast improvement over old-style wood bumpers.

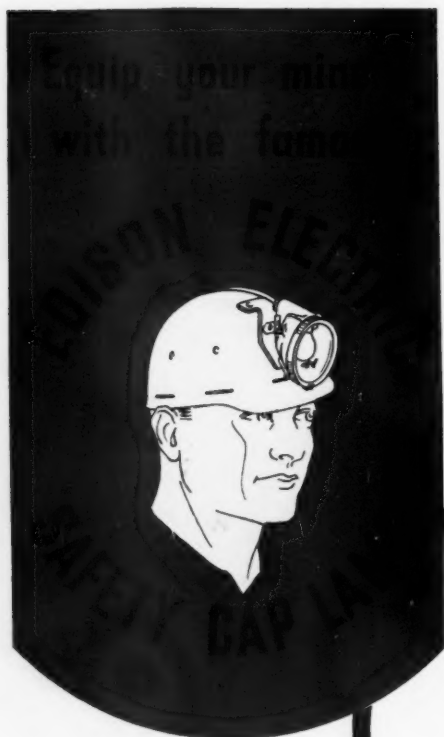
This is but one of many cases where replacing obsolete cars of

low capacity with Bethlehem All-Steel large-capacity cars is proving a first-rate investment. What about your mine cars? Bethlehem engineers will gladly study your operating conditions and suggest the type of Bethlehem All-Steel Car that will most efficiently step up your output, thereby reducing costs per ton of coal mined.



BETHLEHEM STEEL COMPANY

*For more tonnage...cleaner
coal...greater safety ...*



WHEN your miners can see better, you naturally can expect cleaner coal, more tonnage per man, and a reduction in your compensation costs. Equipping your men with the famous Edison Electric Cap Lamps will accomplish this result.

Every year these modern Cap Lamps are being used in ever increasing numbers. More and more alert coal mine operators are realizing that the miner's cap lamp is the most important tool he carries. The best is none too good for him in these days, when the maximum man efficiency must be attained to produce clean coal at the right cost.

Let us prove our claims to you. We shall welcome the opportunity of underground demonstrations or trials of the equipment over a period of weeks. Our rental plans are constantly proving more popular and are worthy of your investigation.



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